THE CRITICAL ROLE OF TECHNOLOGY IN EDUCATION

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Abstract: Technology has revolutionized education by reshaping traditional teaching practices and fostering the acquisition of 21st-century skills. This paper explores how technology integration enhances learning objectives, promotes self-directed learning, and empowers learners for success in an increasingly digital world. The accessibility of information through the internet has expanded learning opportunities beyond classroom confines, nurturing a lifelong quest for knowledge. This research highlights the comparison between traditional and modern education, the need for technology in classrooms, the role of Information and Communication Technology (ICT) in education, the benefits and limitations of technology in education, and its applications. It also examines the negative impacts and the need for digital literacy.

Index Terms - Component, formatting, style, styling, insert.

I. INTRODUCTION

Education has been at the heart of societal development. The face of education has dramatically changed with the coming of technology. In fact, technology has become an integral part in attaining learning goals as well as empowering students with critical 21st-century skills such as collaboration, creativity, problem-solving, and digital literacy. In fact, education systems around the world are turning to digital tools to improve teaching and learning.

Aspect	Traditional Education	Modern Education
Teaching Methodology	Teacher-centred, lecture based	Student-centred, interactive, technology-enhanced
Access to Resources	Limited to physical textbooks and libraries	Vast online resources, e-books, and digital libraries
Learning Environment	Confined to classrooms	Flexible, including virtual and blended learning spaces
Assessment Methods	Standardized tests	Diverse assessments using digital tools
Communication	Face-to-face	Online collaboration platforms

2. Benefits of Technology in Education

Technology enhances the learning experience for students by providing them with the tools and resources necessary to succeed. Online resources help the students to simplify the complex concept and enhances interactive learning experience that keep them engaged.

1. Enhances Creativity and Innovation: Technology has opened up a words of opportunities for students to be creative and innovative. Platforms like Canva, Pinterest they can create their imagination to reality and even can earn money. This type of hands-on learning engages the students and helps in boosting their critical thinking.

2. Flexibility: Use of ICT enhances the flexibility of education after the Covid-19 pandemic. Students can now attend classes from the comfort of their homes [1], and hence geographical barriers have been break down. Platforms like Zoom, Google Meet, and Google Class Room ensure uninterrupted learning. It also promotes remote learning.

3. Enhanced Learning Opportunities: New doors has been opened for Knowledge beyond traditional text books. Students can learn anything with online courses [2] often free of cost and can increase their portfolio. Platforms like Coursera, Udemy, SWAYAM and apps like BYJU's, Vedantu, Topper, Unacademy provide access to world-class content taught by experts.

4. Interactive and interesting Content: Traditional lecture method may fail to attract the attention of students but digital tools like videos, animations and quizzes engage the students and make learning more enjoyable and beneficiary. Technology makes the instruction more inspiring and meaningful [3], [4], [5].

5. Personalize Learning: The pace of learning of every students is different. Technology enables education more personalize for every student depending on their strengths, weaknesses, and their pace. The apps like Duolingo, Drops, Hello Talk enhances the adaptive learning.

6. Skill Development: Today in the fast growing world skill education is more demandable than traditional one. Technology can inculcate the different skills in the students based on their ability, demand of society. Skill based courses like Data- Analysis, programming, tech-driven education prepares students for future job market.

7. Teacher-Student Communication: Technology makes communication hassle free between teacher and students. They can communicate anytime, from anywhere using various platforms like Email, Whastapps, Moodle, and Classroom. Social media also play a very crucial role in communication such as Facebook, Instagram. Teachers can now with the help of these technological tools can support students in diverse conditions even outside the class hours. This also promotes continuous learning and provide feedback for improvement.

3. Challenges of Technology in Education

1. Lack of professional Training: The technology in education require well professional teacher trainer but there is adequate shortage of professional teachers at higher institutions. Teachers should be known to usage of technological tools and they must be trained to impart that knowledge to students.

2. Lack of Budget: The higher education institutions suffers monetary issues for the implementation of technology in education. There should be well established infrastructure for the technological usage but most of the institutions cannot afford the price required for the establishment of labs.

3. Poor Network Infrastructure limitations: For the effective use of ICT in education, a strong network, high speed internet with high quality Wi-Fi is required but it is very challengeable for the institutions to provide these basic requirements to the students for the usage of technology and in rural or remote areas it is more critical to provide the network infrastructure.

4. Digital Divide: Digital divide means that there is a gap between the students who can use the technology and who cannot use that technology. This gap may be due to availability or non-availability of resources at various places. The gap may be also due to the how to effectively use the technology. This gap depends on geographical area (Rural areas/Urban areas), socioeconomic status of students, and educational institutions (Government/Private Institutions). There is less accessibility of resources at rural areas as compared to urban areas. The cost of technological devices create socioeconomic differences among students.

5. Language barriers in digital content: Language plays a very crucial role in learning. Students are more comfortable with their mother tongue or local language but the digital content is in English language and therefore most of the students are unable to learn basics of ICT.

4. Negative Impact of Technology in Education

1.   Distractions: Excessive use of technology in education causes distraction from the main content which can hinder the effective learning. Students may take short breaks in between the studies for relaxing their minds but instead of doing physical activities they engage themselves in technological resources like social media, play online games and finally they lose their focus from the studies.

2.   Loss of Face-to Face Interaction: Increasing use of online courses, virtual classrooms, and remote learning platforms increases the loss of face to face interactions and these may cause lack of self confidence among students in long run of life. The students who are frequently using ICT have less self-confidence as compared to students who are physically attending the classes. The absence of physical interaction can hinder the skill development, cooperation's, meaningful discussions among the students.

3.   Confusion Creations: The excess availability of digital content may confuse the students to select the right content. In some cases the student may select wrong content and can destroy their future also. There is a lot of information is available just at a single click which increases the risk of misusing the information.

4.   Reduced the original skill: Technology provides quick solutions to every problem, which can discourage the students to think about the solutions which decreases the critical thinking skill of students. Students will not bother to find the solutions of problem if they will get all the information readily present on internet.

5.   Writing skill reduce: By the use of technology students are reducing their writing skills. They totally rely on ICT and don't want to do written work.

Conclusion

The use of technology in education has led to many positive changes in the teaching and learning process. It also enhance the skills of students making them independent and more progressive. It has increased the opportunities beyond traditional classrooms, enhanced the various qualities in the students as well as in teachers. However there are challenges that need to be addresses to ensure the effective use of technology in education. Overall after Covid-19 pandemic the use of technology has done many remarkable changes in the society and in the lives of students and teachers. Proper use of ICT may set remarkable milestones in the young generation and make them more reliable and successful in life.

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